

CLAIMS

1. A diaphragm pump comprising a two part casing formed of a front cover and a back cover, a diaphragm plate extending across the covers and being secured therebetween when the covers are fastened together, the diaphragm plate having a plurality of similarly defined circular regions, the front cover having substantially axially aligned inlet and outlet ports, each leading to mutually exclusive inlet and outlet chambers respectively, a valve housing securable inside the front cover and having defined therein an outlet dished valve seat with a correspondingly concave resilient valve seated therein, the outlet valve sealing having fluid passages therethrough, and a plurality of inlet valve seats, equal in number to the number of regions, each being similarly dished and having a correspondingly concave resilient valve seated therein, each inlet valve seat having fluid passages therethrough, the outlet valve being in fluid communication with the outlet chamber and the inlet valves being in fluid communication with the inlet chamber, and a wobble plate positioned in the back cover and having a central boss and a plurality of similar piston sections equal in number to the number of circular regions on the diaphragm, the piston sections and circular regions being correspondingly secured together, the wobble plate being subject to nutating motion to cause reciprocating action by the circular regions and provide a pumping action.
2. A pump as claimed in Claim 1, wherein the circular regions of the diaphragm are each provided with an outstanding lug formation and the mating surfaces of the piston sections of the wobble plate are provided with complimentary shaped slots, the securement being formed when the lug formation of each region is engaged in the slot of the corresponding piston section.

3. A pump as claimed in Claim 2, wherein the lug formation of each diaphragm and the slot of each corresponding piston section is of cruciform shape.
- 5 4. A pump as claimed in Claim 2 or 3, wherein the outer ends of the lug formation are of greater length than the slots to provide a locking means in the slots.
5. A pump as claimed in Claim 1, 2 or 3, wherein a rear diaphragm support plate
- 10 is provided in the back cover, the support plate having an equal number of similar apertures to the number of circular regions, each aperture having a walled surround, the circular regions fitting into respective apertures and being supported thereby.
6. A pump as claimed in any one of the preceding Claims, wherein the wobble plate boss seals and holds a bearing having a ball race, the boss having an inwardly-extending retaining flange.
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7. A pump as claimed in any one of the preceding Claims, wherein the casing is secured to an electric motor with the drive shaft connected to the bearing.
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8. A pump as claimed in any one of the preceding Claims, wherein the casing has a mounting bracket with a series of mounting feet fitted thereto, the feet each being substantially ovoid in plan and of resilient material, the greater dimensioned end having an upstanding headed stub pillar, each pillar mating in a open slot in the
- 25 bracket, the slot being narrower at its open end to hold the respective foot in its slot.

9. A pump as claimed in Claim 8, wherein the feet are similarly provided with
at
least one fixing hole at their narrower end and being capable of rotating about their
respective mating slot.

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10. A pump as claimed in any one of the preceding Claims, wherein the valve
housing is fixed to the front cover by a screw.

11. A pump as claimed in any one of the preceding Claims, wherein an integral
10 pressure switch is provided in the back cover with the diaphragm plate being
provided with a fifth defined circular region, smaller than the others, the rear
diaphragm support plate having a similarly shaped aperture with wall surround to
accommodate a micro-switch activated by movement of the fifth circular region
serving as a pressure switch pad, the electrical wires to the micro-switch being fed
15 internally from the front face of the motor.

12. A pump as claimed in any one of the preceding Claims, wherein the valve
housing, on the same side as the inlet valve seats are positioned, is provided with a
track leading from a hole exiting on that side and centrally provided in the outlet
20 valve seat provided on the opposite side, the track mating with a corresponding track
provided on the diaphragm plate, the mated tracks forming a passage between the
hole and the fifth circular region whereby any fluid leaving the outlet chamber when
under pressure through the screw travels along the passage and fills a void at the
pressure pad on the opposite side of the diaphragm plate from the pressure switch
25 causing activation of the micro-switch to stop the pump.

13. A diaphragm pump substantially as hereinbefore described with reference to the accompanying drawings.